DOCUMENT RESUME

ED 133 310 SP 010 697

TITLE Health Education: Cancer Prevention and Control. Curriculum Guides, Grades 10, 11, and 12.

INSTITUTION New York State Education Dept., Albany. Bureau of School Health Education and Services.; New York State Education Dept., Albany. Curriculum Development Center.; State Univ. of New York, Albany.

PUB DATE 76

NOTE 86p.; For related documents, see SP 010 695-697

EDRS PRICE MF-$0.83 HC-$4.67 Plus Postage.

DESCRIPTORS *Curriculum Guides; Disease Control; Health Activities; *Health Education; Physical Health; Preventive Medicine; Self Care Skills; *Senior High Schools

IDENTIFIERS *Cancer

ABSTRACT

These curriculum guidelines for tenth-, eleventh-, and twelfth-grade students discuss the prevention, early detection and treatment, and control of cancer. The nature of cancer, the epidemiological factors related to it, the types of treatments available, and rehabilitation of cancer victims are discussed. Finally, the unit discusses personal and community responsibility regarding cancer control. Upon completion of the unit, the student will be able to (1) differentiate between a normal and cancer cell in terms of purpose and function, (2) describe the process of cancerous cell proliferation and its effects on surrounding tissue and of the entire body, (3) associate suspected cancer-causing factors with commonly occurring cancer, and the common sites of cancer in human beings, (4) analyze cancer morbidity and mortality rates in the population of the country, of regions with differing rates, and of the community, (5) show how early detection affects cure and/or eradication rates, (6) compare methods of treatment, (7) show how continued follow-up ensures sustained control, (8) identify services and resources aimed at cancer control and prevention, (9) determine ways of using these resources, (10) demonstrate how to do a self-examination for cancer detection, (11) describe world, national, and regional organizations involved in cancer eradication, and (12) identify personal responsibility for cancer control and prevention. The text of the guide is divided into three columns per page, dealing with concepts, activities, and supplementary information for the teacher. A glossary of terms and seventeen appendixes of charts, graphs, and drawings expand on information contained in the text. (MB)

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ED133310

HEALTH EDUCATION:

CANCER PREVENTION AND CONTROL

Curriculum Guides

Grades 10, 11, and 12

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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The University of the State of New York/The State Education Department

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Table of Contents

	Page
Introduction	v
Objectives	vi
Cancer Control: A Problem for Society	1
The Basic Nature of Cancer	2
Occurrence	5
Cancer Prevention	6
Skin Cancer	7
Lung Cancer	8
Breast Cancer	9
Cervical Cancer	13
Colon and Rectrum Cancer	16
Rehabilitation	16
Cancer Quackery	17
Community Responsibility in Cancer Control	18
Glossary	20
Appendix	24

INTRODUCTION

There are approximately 136,000 new cases of breast and uterine cancer diagnosed each year, and approximately 44,000 deaths. More than 90% of the uterine cancer deaths can be prevented if each woman would receive a yearly Pap test. In addition, most breast cancer fatalities could be prevented if the disease were detected in its early stages. Breast cancer can be detected early through a monthly self-breast examination.

These curriculum guidelines place major emphasis upon the prevention, early detection and treatment, and control of cancer. This is especially true regarding the four most preventable forms of cancer --- lung, skin, breast, and cervical. The nature of all cancers, the epidemiological factors related to them, the types of treatments available, and rehabilitation of cancer patients are discussed. Finally, the student will learn about personal and community responsibility regarding cancer control.

OBJECTIVES

At the completion of the unit in health education dealing with cancer prevention and control, the student will be able to:

1. Differentiate between a normal and cancer cell in terms of purpose and function in life-sustaining processes.

2. Describe the process of cell proliferation in cancer and the resultant effects the cancerous growth has on the life and functions of the surrounding tissue and of the entire body.

3. Associate suspected cancer-causing factors with commonly occurring cancer, and the common sites of cancer in children, in males, and in females.

4. Analyze cancer morbidity and mortality rates in the population of the country, of regions with differing rates, and of the community.

5. Show how the early cancer detection effects the rate of cure and/or possible eradication of certain types of cancer.

6. Compare the methods of cancer treatment.

7. Show how continued follow-up studies of cancer patients ensures sustained control.

8. Identify community resources and services aimed at cancer control and prevention.

9. Determine ways of using and/or assisting community resources and services in their projects.

10. Demonstrate how to do a self-examination for purposes of early cancer detection.

11. Describe the chief research efforts aimed at cancer eradication by world, national, and regional organizations.

12. Identify personal responsibility in cancer control and prevention through health maintenance and an active role in the maintenance of a safe and healthful environment.

CONCEPTS	ACTIVITIES	SUPPLEMENTARY INFORMATION
I. Cancer Control - A Problem for Society		
Cancer is a common chronic disease in the U.S. and throughout the world. It is the second cause of death in the U.S.	Relate this fact directly to the class--compute how many are likely to develop cancer.	53 million Americans now living will eventually have cancer. This year more than one million Americans will be treated for cancer. There are over 1½ million Americans alive today who have been cured of cancer. (A patient is considered cured if he is clinically free of disease at least 5 years after diagnosis and treatment.) Today 1/3 of cancer patients are cured.
One in four people alive today will develop cancer.	Present figures from chart "Cancer Around the World" (Lesson 8, "The Nature of Cancer, Senior High", ACS #2054.02). Refer to chart comparing cancer incidence and other major diseases.	
Cancer strikes someone in 2 of every 3 families.	Discuss various ways the national economy is adversely affected.	
The economic costs to society of cancer are very great.	In what way is the cost of cancer borne by society as a whole?	Cancer is more common in developed countries where residents have longer life spans.
Because the costs to society are so great, cancer control, i.e., prevention and treatment, has become a major social issue. (See Training Manual for a discussion on "The Economics of Cancer".)	Write local, state, or federal legislators for their opinions on the role of government in cancer control. What are some recent legislation introduced in this regard?	Cost to society are incurred through: 1) Costs of treatment, i.e., doctor bills, outpatient therapy, hospitalization and drugs; insurance premiums, social security and welfare payments, lost tax revenue. 2) Loss of worker talent and productivity because of illness or death.
	Write the National Cancer Institute (NCI) for information on the National Cancer Program.	
There are many efforts being made to control the incidence of cancer.	Show ACS film, "Investment in Life", (#5632). Ask behaviorial scientists, (psychologists, anthropologists, sociologists) about the role of various psycho-social factors in health status, attitudes and behavior. (See Training Manual - "Psychological and Social Aspects of Cancer Education".)	Approaches to controlling cancer: 1) Support research aimed at finding cures and improving detection and treatment. 2) Increase availability and quality of existing care. 3) Educate public in cancer prevention and detection. 4) Where possible, eliminate cancer-causing agents in the environment and prevent introduction of new ones.

CONCEPTS	ACTIVITIES	SUPPLEMENTARY INFORMATION
Increases in technology have created environments that contribute to an increase in the incidence of some types of cancer.	Appoint students to research pros and cons of the following issues: 1) The benefits of atomic energy outweigh the health dangers to society. 2) The development of the SST (supersonic transport), with stress on the effects on the stratosphere. 3) The dangers of automobile air pollution are great enough to justify a crash program to curtail auto use.	
II. <u>The Basic Nature of Cancer</u>		
Cancer is a large group of diseases with similar characteristics. (See Training Manual for a discussion of "The Nature of Cancer".)	Use: ACS teaching kit, "The Nature of Cancer", Senior High, Lesson I, #2054.02	Some of the similar characteristics of the various types of cancers are: 1) Longer cell life than the cells from normal tissues from which cancers are derived. 2) Failure to maintain boundries of normal tissues and organs. 3) Under the microscope, cancer cells resemble immature cells rather than mature cells. 4) Capable of metastasis (spread) and growth in distant parts of the body. 5) Loss of specific function.
	Use a wall chart of the circulatory and lymphatic systems to demonstrate how cancer cells spread through the body. (See Appendix V.)	
Not all tumors are cancers (many are benign or non-cancerous) and not all cancers are irreversibly fatal.		Even with the similar properties of all cancers, there are great differences between the many different types. Some of the differences are: 1) Site (location of tumor) 2) Severity of illness 3) Causes (if known) 4) Occurrence in different age groups and sexes.

CONCEPTS	ACTIVITIES	SUPPLEMENTARY INFORMATION
		For these reasons, it is better to think of cancer as a collection of diseases.
Cancer disrupts the body's homeostasis.	Define homeostasis: - How is cancer related to homeostasis?	Homeostasis is the ability of the body to maintain itself, or keep a steady state, against changes in the internal and external environments.
	Discuss homeostasis: Have student run in place, take pulse, then take pulse 60 seconds later. Compare.	When the heart rate accelerates it increases the flow of blood containing oxygen and nutrients to the muscles and carrying wastes away. After resting, the heart beat returns to normal. When homeostasis is interfered with, the cells of the body cannot adjust properly to changes and suffer a loss of vitality and health.
Scientists have identified several kinds of cancers which fall into three general categories.	What are the three classifications of cancer?	There are three types of cancer as follows: 1) Carcinoma - affects epithelial cells, such as skin, lining of gut or lungs, lining of ducts as in liver or breast. 2) Sarcoma - affects bone and connective tissues and nervous system. 3) "Diffuse tumors" - "liquid tumors" - leukemias.
	What methods are used to treat cancer?	In some cancers, surgery is the treatment of choice, in others radiotherapy and in others chemotherapy. (See Training Manual on "Cancer Treatment".)
Cancer is a form of abnormal cell growth; it can strike in any body cell. (See Appendix IV.)	Describe the characteristics of cancer.	Our understanding of the mechanism of cancer production is not complete. However, the understanding of the biology of cancer has improved greatly.

CONCEPTS	ACTIVITIES	SUPPLEMENTARY INFORMATION
Specific properties of various cancers vary from site to site, depending upon the type of cells affected.		It is felt by many observers that an alteration in the genetic code (DNA, RNA) caused by outside factors may underlie the basis for cancer.
Cancers grow and spread at varying rates and different types of cancers are most susceptible to different types of treatment.		
Cancer's abnormal cells upset the normal functions of the body.	Diagram mitosis: Illustrate cancer cells in a mitotic process. - How does this differ from normal mitosis? - How is it similar? View ACS film, "From One Cell",(#2348) In discussion, stress the importance of early detection in leading to treatment before metastasis begins. Describe the difference in survival rating from those with cancer who are treated early and those who are not.	Both normal and cancer cells reproduce by mitosis. In normal cells the process of mitosis is orderly and sequential and forms only two new daughter cells. In cancer cells, the process is disorderly and wild. Several new daughter cells are formed. In fact, new cells may begin to divide before a previous division is completed. (See Appendix IV.) Interference of the normal body state will eventually lead to illness. It is hypothesized that 80% of all human cancers are caused by agents in the environment. A good example of this is the series of chemical carcinogens found in cigarette smoke.

CONCEPTS	ACTIVITIES	SUPPLEMENTARY INFORMATION
A. <u>Occurrence</u>		
Occurrence of cancer varies by site but is much more common in certain sites than others.		Skin cancer is the most common form. Other than skin: <u>Male</u>: The lung, prostate and large intestine are the three most common sites.
Cancer spreads by a process known as metastasis. (See Appendix V.)	Describe the process of metastasis.	
Epidemiological studies of cancer include information on cancer incidence in: - different countries - races - sex - region (urban-rural) - habits (smoking) - diet - occupation - health habits - heredity	Why is cancer more common in certain sites than others? What environmental factors contribute to this occurrence? "Cancer Rates and Risks" produced by NCI is an excellent reference used to review the basic epidemiology of cancer. (See appendix for several major charts for student references.)	<u>Female</u>: Breast, large intestine, and cervix (uterus) are the three most common sites. (See Training Manual for discussion on "Cancer Sites".)
	Have students make a list of food they eat for one week. Read the labels of those in packages and list the chemicals added. List fresh foods and the possible chemical residue from insecticides or preservatives. - Are there any chemicals or identified carcinogens in their diets? - Describe other substances that are consumed that may have carcinogens in them, e.g., tobacco. - Is there any relationship between alcoholic beverage consumption and cancer? (See Training Manual for listing of carcinogens; also for a discussion of "Hormones and Cancer".)	Diet is one of the most interesting areas of research pertaining to cancer incidence. Future research may give certain dietary statistics which humans will follow to reduce the risk of certain forms of cancer. Certain chemicals have already been identified in minute amounts in certain foods which have caused cancer in laboratory animals. - <u>Aflatoxin</u> - a mold found on spoiled peanuts, cereals, and corn is found where liver cancer is common. - <u>N-Nitrosamines</u> - a compound found in the environment which has been related to cancer of the esophagus.

CONCEPTS	ACTIVITIES	SUPPLEMENTARY INFORMATION
The foods people eat can be a source of substances that can cause cancer in certain organs of the body. (See Training Manual - "Does Cancer Run in Families?")	What government agency (or agencies) is responsible for the foods we eat? How effective are their programs? Describe how this agency goes about to insuring the safety of the foods eaten by people.	- Smoked or Pickled Foods - related to a high incidence of cancer of the stomach in areas of the world where these foods are commonly used. - Combinations of dietary components (low protein, different vitamin levels) with certain chemicals may have carcinogenic actions. - Low fat diet - is related to a low incidence of cancer of the colon and rectum in the Japanese population. - Vinyl Chloride - a chemical used in the plastic industry has been related to a higher incidence of cancer of the liver. PVC food packaging has been banned.
There are many misconceptions about cancer cause and cure.	List some books that have been written about cancer. Analyze them. (See Training Manual for "Book List".)	Over-reaction to information published in newspapers, magazines or books can be more harmful than the problem itself. Dietary facts related to cancer are still basically in experimental form but much research is being done around the world in this area, and very interesting facts will be produced as time goes on.
B. Cancer Prevention		
Prevention is any way in which something is averted. In this case, cancer. Some cancers are preventable, many are not. Certain cancers of the skin and lung are preventable. (See Training Manual - "The Prevention of Cancer".)	Show ACS film, "Signals", (#2376.) - What cancers are preventable? - What cancers are treatable? - What is the chief factor that determines the possible cure of cancer? (Use ACS "1976 Cancer Facts and Figures", #5008.)	It is society's responsibility as well as the individuals to pursue good health. Prevention and early diagnosis of cancer can only take place if the public is motivated to act through knowledge. Even though the majority of cancers are not preventable, through education and early detection, these cancers could be more treatable.

CONCEPTS	ACTIVITIES	SUPPLEMENTARY INFORMATION
III. Skin Cancer		
Skin cancer is prevented by avoiding excessive exposure to the sun. (See Training Manual - "Cancer Sites".)	Show ACS film, "Sense in the Sun", (#2331 English, #2331.19 Spanish).	Most deaths from skin cancer result from malignant melanoma, a rare skin cancer, the cause of which has not been discovered.
	Have students research the incidence of skin cancer in the various states.	Skin cancer is more common in the South where exposure to the sun is greater.
	Have students discuss with local pharmacist the variety of available sun screens and report to class on their use and effectiveness.	The ozone layer in the stratosphere protects the earth from heavy bombardment by cancer-causing ultraviolet rays.
	Students research and report on the effect on the ozone layer of: 1) jet planes - particularly SST 2) aerosols containing flurocarbons	Many factors of modern life, i.e., jet planes, may reduce the amount of ozone, increasing exposure to ultraviolet rays and increase skin cancer incidence.
		Sun lamps do not cause cancer.
Recent success in treating skin cancer by mobilizing the body's immune defenses holds promise of great advances in the treatment of all cancers.		Very rarely, physicians observe cases of spontaneous regression of cancer. This disappearance of all clinical symptoms of cancer occurs without any form of treatment. Scientists regard this as a sign that the body has certain immune defenses which attack cancer cells as they would bacteria or other outside invaders.
Skin cancer responds well to treatment. (See Training Manual for a discussion of "Cancer Immunotherapy".)	Define immunotherapy.	Immunotherapy seeks to stimulate and increase the effectiveness of immune elements in the host which specifically attack tumors. Immunotherapy has been proven effective in the treatment of certain kinds of skin cancer. Its use is being studied in the treatment of other forms of cancer.
	Describe how it is used in treatment of skin cancer.	
	Have students report on the immune system and how it fights disease.	
	Discuss: How the immune system may be mobilized to fight cancer.	

CONCEPTS	ACTIVITIES	SUPPLEMENTARY INFORMATION
IV. Lung Cancer		
Most lung cancer can be prevented by not smoking cigarettes.	See ACS kit, "Nature of Cancer, Senior High", Lesson 5, (#2054.02). Discuss the epidemic of lung cancer following the introduction of cigarettes during WWI, using a simple wall chart or chalk board (see graph in Appendix X.)	RPMI will supply information on animal experiments in cancer research. (Use ACS "Answers to the Most Often Asked Questions About Cigarette Smoking and Lung Cancer", #2023, and ACS "1976 Cancer Facts and Figures", #5008).
Cigarette smoke contains carcinogens - chemicals which cause cancer.	Collect cigarette tars with a manual smoking machine. Compare amounts collected from various brands including filter cigarettes. (Use "Smoking Simulator", #2732.ACS).	Chemicals identified in cigarette smoke and tars: 1) Polycyclic Aromatic Hydrocarbons 2) Nicotine 3) Ammonia 4) Cadmium 5) Carbon Monoxide 6) Arsenic 7) Methane 8) Chloroform 9) Phenol 10) Aldehydes 11) Nitrogen Oxide and Nitrosamines 12) Amines
Filters are designed to remove chemicals (tars) from the smoke.	Appoint students to research and report on the nature of specific chemicals found in cigarette smoke and their effects on the body.	
Smoking is also related to cancer of the mouth, esophagus, larynx, bladder and pancreas.	Show ACS film, "The Embattled Cell", (#2397). Discuss incidence of oral, larynx, esophogeal and bladder cancer in smokers. ACS Pamphlet "Cancer of the Mouth", (#2630) and "Cancer of the Larynx", (#2631).	
Since the confirmation of the ill effects of smoking on health, the percentage of adult smokers had declined.	Have students research and report on the Surgeon General's Report on Smoking and Health, 1964. See also subsequent reports.	In 1965, 43% of adults smoked. By 1971, the percentage had fallen to 36%. There are over 30,000,000 ex-cigarette smokers. However, smoking among women is increasing. It is believed that this will lead to a

CONCEPTS	ACTIVITIES	SUPPLEMENTARY INFORMATION
	What positive effects did this report have on the people who smoke?	continued rapid increase in female lung cancer rate.
	Discuss how the attitudes of society have changed since the publication of the Surgeon General's Report in relation to: 1) The general awareness of health dangers. 2) How many people have quit or reduced their smoking. 3) The growing popularity of filter and low tar cigarettes.	The average cigarette of today is 50% lower in tar content than 20 years ago. In 1965, 3.5% of cigarettes were filter-tipped. Today filters account for 85% of the market. (See Strand II on "Tobacco and Drugs" for further information.)
	Have a student report on the growth in the use of filter cigarettes.	Marijuana, like any other burning leaf, produces carcinogenic tars. Despite reports that THC (tetrahydrocannabinol) inhibits tumor growth, there is no reason to believe that smoking marijuana prevents lung cancer. It most probably contributes to it. (See Training Manual for a discussion on "Marijuana and Lung Cancer".)
	Discuss: Reduced smoking and increased demand for low-tar cigarettes represent a radical change in public attitude toward smoking.	
Cigarette advertizers are chiefly concerned with selling more cigarettes and persuading non-smokers to smoke.	Have students bring in and discuss cigarette ads and the various techniques used to persuade people to smoke.	
	Students may wish to organize a stop-smoking clinic. The local unit of ACS will provide help or write: Public Education Dept., Roswell Park Memorial Institute for information.	(See ACS Booklet, "Stop Smoking Program Guide", #5003.)
V. Breast Cancer		
Breast cancer and cervical cancer are diseases, which detected early and treated promptly, are highly curable.		This section on breast and cervical cancer may be presented in a coed setting or to only the women. It is suggested that all senior high school girls be the

CONCEPTS	ACTIVITIES	SUPPLEMENTARY INFORMATION
		target audience. No woman should leave high school ignorant of self-protection measures against breast and cervical cancer.
Breast cancer is the leading cause of death by cancer among women. 1 in every 13 women will develop breast cancer.	Use a wall chart to show incidence of breast cancer in relation to other malignancies.	This year there will be about 90,000 new cases of breast cancer and 30,000 to 35,000 deaths, most of which are unnecessary.
The specific cause of breast cancer is unknown. There is no known preventive measure in relation to breast cancer.	Encourage students to discuss experience with breast cancer among relatives and acquaintances. What are the characteristics of women most likely to develop breast cancer? What factors are suspected of being associated with the cause of breast cancer? Does breast feeding increase the likelihood of the mother developing breast cancer? Discuss cystic disease. (See Training Manual for a discussion of "Cystic Disease" and "Hormones and Cancer".)	Women who have a higher risk of breast cancer are those who: 1) Are over 35 (risk increases with age). 2) A woman who has never had a child. 3) A woman who had her first child after age of 25. 4) A woman whose mother, sisters or other maternal relatives have had breast cancer. 5) A woman who experienced early menarche and/or late menopause. In general, a woman's hormonal status affects her chances of breast cancer. No specific cause is known. It is believed that several factors including hormones, viruses and environmental agents may be involved. There is no evidence that breast feeding affects the incidence of breast cancer. There is little evidence that the use of birth control pills increases the risk of breast cancer or that breast cancer is caused by a bump or blow to the breast.

CONCEPTS	ACTIVITIES	SUPPLEMENTARY INFORMATION
Detected early, breast cancer is a highly curable disease.	Discuss famous people who have had breast cancer; notably, Mrs. Betty Ford, Mrs. Happy Rockefeller, and Shirley Temple Black.	95% of breast cancers are detected by the women themselves.
The best way for a woman to protect herself against breast cancer is with breast self-examination and a yearly physical checkup.	Show ACS film, "Something Very Special", #2354, and ACS Pamphlet, "How to Examine Your Breasts", #2008, and Wall Chart, "How to Examine Your Breasts", #2123. Also available in 3'x5' poster, #2224 or 4'x8' poster, #2207.	Use Teachers Guide, "Something Very Special", #2013.
	Use a "Betsi" teaching model (available from ACS) to familiarize each girl with the method of Breast Self-Examination (BSE) - Breast Teaching Models.	Use of the "Betsi" is very important in teaching BSE. Films and demonstrations supplement, but do not replace, the "Betsi", a technique which utilizes tactile perception.
Every woman should examine her breasts every month after her menstrual period.	Demonstrate and practice breast self-examination (See Appendix XVI and Training Manual for more information.)	Women should practice BSE even after menopause.
Most lumps which are found are benign but only a doctor can tell for sure.	Discuss with students why women do not practice BSE, pointing out that conscientious and regular BSE eliminates anxiety instead of creating it.	Self-consciousness, fear, apathy and laziness are some of the chief reasons many woman fail to examine their breasts.
	Encourage students in discussion to identify blocks to positive action (BSE) and arrive at a group decision for action.	Only 20-25% of lumps surgically removed are malignant.
A woman who finds a lump should notify a doctor at once.	Discuss reasons why women hesitate to report changes in their breasts to doctors and reiterate the importance of early treatment.	Reasons why women fail to report breast changes: 1) Fear that all lumps are cancerous and all cancers fatal. 2) Modesty 3) Ignorance of the meaning of changes. 4) Lack of confidence in BSE.
Every woman should visit the doctor for a physical exam at least once a year.		

CONCEPTS	ACTIVITIES	SUPPLEMENTARY INFORMATION
Physicians may employ sophisticated techniques such as mammography, thermography, xeroradiography in detecting breast cancer.	Discuss the new detection tools a doctor can use to find breast cancer earlier. 1) What are these? 2) Why may they be necessary? 3) What do they show? Invite a physician, radiologist or health department official to discuss the uses of mammography, thermography and xeroradiography. Assign a student to research and report on the availability of mammography, thermography and xeroradiography in your community. Write an article on breast cancer and breast self-examination for the school newspaper.	Mammography and xeroradiography are x-ray techniques for discovering and identifying tumors. Thermography relies on the fact that tumors produce more heat than surrounding tissues. A thermogram is a "heat picture" of the breast. Thermography has not been found to be as useful as the other two techniques. Mammography may be useful as a mass screening technique particularly in women of high risk, i.e., those over 40 with a familial history of breast cancer. Currently, economic and logistical barriers rule out mammography as a mass screening technique for <u>all</u> women. Also, physicians advise against repeated, unnecessary use of x-rays. (See Training Manual for more information on detection methods under "Cancer Sites".)
Like most cancers, breast cancer is treated by surgery, radiotherapy or chemotherapy.	Discuss: The aim of cancer treatment is the removal or destruction of all cancer cells. How is this achieved?	Surgical removal of the breast is called mastectomy. It is usually necessary to remove the entire breast in order to be sure no cancer cells escape.
Many treatment modes are available to a physician. The physician selects the best mode of treatment based on his appraisal of the individual case.	Invite a physician or health department representative to discuss breast cancer and to teach self-examination. Invite a woman who has had a mastectomy to duscuss her operation and adjustment to life. A speaker may be available through "Help Yourself to Recovery" or "Reach to Recovery", both sponsored by the local unit of the ACS. Define mastectomy.	<u>Radical mastectomy</u> involves removal of the breast with the overlying skin, the pectoral muscles and axillary lymph nodes (located near ribs and under arms). <u>Super radical mastectomy</u> involves removal of additional lymph nodes in the chest wall. <u>Modified radical mastectomy</u> involves removal of the breast and overlying skin and axillary lymph nodes but preservation of the pectoral muscles.

CONCEPTS	ACTIVITIES	SUPPLEMENTARY INFORMATION
	Distinguish between the several kinds of mastectomies.	Simple mastectomy consists merely of removal of the breast with lymph nodes and pectoral muscles left intact.
	Who makes the decision as to which kind of mastectomy is needed?	"Lumpectomy" or removal of the tumor and surrounding tissue, with part of breast left intact is not widely advocated because of the possibility that breast cancer is a multi-focal disease arising at several different points in the breast.
Both surgery and radiation therapy may be used in treating breast cancer.	State how each of the following treatments contribute to curing cancer: - surgery - radiation therapy - chemotherapy	In addition to surgery, radiation therapy may be used pre and post operatively to kill cancer cells and reduce tumor size. Chemotherapy provides relief and extends life in cases beyond cure. In addition, breast cancer, unlike most cancers, is affected by changes in hormonal status, and physicians may manipulate a patient's status, surgically or with endocrine replacements (hormones). (See Training Manual for discussion of "Hormones and Cancer".)
VI. Cervical Cancer		
Cancers of the uterine cervix is the second most common cancer in women, after breast cancer (excluding skin cancer).	Show ACS films, "It's Up to You", #2368 or "For A Wonderful Life", #2342. Discuss: The relation of cervical cancer to sexual activity. How common is cervical cancer? What is the cause of cervical cancer?	This year there will be more than 80,000 cases of cancer of the uterine cervix. Almost 2/3 of these, however, are carcinoma in-situ of the cervix, a relatively easy disease to cure surgically. Carcinoma in-situ - when all tumor cells still lie within the tissue of origin. Invasive cancer - when the tumor cells extend through the membranes of the tissue of origin.

There is evidence that the incidence of cervical cancer varies with specific epidemiological factors.	Develop a graph showing the incidence of cervical cancer for women who have had several children; low income and high income groups, and epidemiological factors.	Cancer of the uterine cervix accounts for 12% of malignancies in women. Almost 8,000 women die of it every year. The cause of cervical cancer is unknown but a possible relationship has been found to early sexual activity and multiple partners. It is extremely rare in virgins. Incidence is higher in married than in single women, in women who married young or began sexual intercourse at an early age. It is higher in low-income groups than in high-income groups of the same given population. Incidence rises with the number of sexual partners.
Cervical cancer begins as a slow-growing, easily treatable disease. If undetected or left untreated, the early cancer can become invasive cancer, a more difficult problem to treat.		Research is currently aimed at the possibility that cervical cancer is caused by a virus, possibly transmitted during intercourse. (See Training Manual for a discussion on "Viruses".)
Cervical cancer is treatable and curable.	Describe how cervical cancer develops. - How is it detected? - How effective is the technique? - How is it treated?	Cervical cancer begins in the top layer of cells and only slowly invades the adjacent tissues. In its early stages, the abnormal cells, when viewed through a microscope, are easily detected by a trained pathologist. Cells that may be destined to become in-situ or invasive cervical cancer cells can be destroyed by simple techniques before they begin to invade underlying tissue. (See Appendix V.)

CONCEPTS	ACTIVITIES	SUPPLEMENTARY INFORMATION
The Pap Test makes possible detection of cervical cancer many years before overt symptoms appear, when the disease is easily cured.	Student report on the story of Dr. Papanicolau and the development and introduction of the "Pap" Test. Show ACS film, "The Odyssey of Dr. Pap", #2364.	Essentially, the procedure for the Pap Test is as follows:
The Pap Test is a simple, quick and painless procedure which may be done in a physician's office or a clinic. Any woman who has begun to have sexual intercourse should have a Pap Test every year.	Invite a doctor, R.N., or Health Department representative to speak on and describe the Pap Test. Discuss with students how they feel about the Pap Test and the idea of visiting a doctor even when they feel healthy. Assign students to inquire at local hospitals, clinics, and health departments about availability of Pap Test. Report to class.	Living cells are collected from the vaginal fluid and by gently scraping the surface of the cervix. The cells are spread on a microscope slide and sent to a laboratory to be examined by pathologists, trained to recognize abnormal cells. If the Pap smear reveals cells suspicious of cancer, the physician confirms the diagnosis with a biopsy (the surgical removal and examination of bits of tissue from the suspected area).
Treatment of cervical cancer varies with individual circumstances and the extent of spread. In early cases of cancer a woman may be successfully treated and still retain her childbearing capacity.	Discuss the treatment of cervical cancer and the importance of early detection. Write an article for the school newspaper on the Pap Test; who needs it and where it is available. (Reference: "Cancer of the Uterus", #2006, and "1976 Cancer Facts and Figures", #5008).	Cervical cancer can be treated by surgery or radiation. Women in the early stages of carcinoma in-situ who wish to have children can be treated by simple surgical methods and retain full sexual function. Women not desiring children may have a total hysterectomy with preservation of the ovaries. (Hysterectomy is the removal of the uterus.) Preservation of the ovaries is important in maintaining the female hormone balance.
Daughters of mothers who received "DES" during pregnancy may be at risk of developing cancer of the cervix or vagina. All young women who think they have been so exposed should consult physician.		(For further discussion of diethylstibestrol (DES), See "Hormones" in Training Manual).

CONCEPTS	ACTIVITIES	SUPPLEMENTARY INFORMATION
VII. Colon and Rectum Cancer		
Colon and rectum cancer is the most common internal cancer and the second-leading killer after lung cancer.	Discuss the incidence of colon and rectum cancer. Show ACS film, "On With Your Life".	There is some evidence linking diet to incidence of cancer of the colon and rectum. This indicates that a decrease in high fat foods such as beef and an increase in "bulk" foods such as whole grains, would be beneficial.
While there is no known way to prevent cancer of the colon and rectum, mortality can be reduced by annual physical checkups, including a proctoscopic exam after age 40.	(See Training Manual for discussions of cancers of the thyroid, pancreas, and Wilms' Tumor, and ACS Pamphlet, "Cancer of the Colon and Rectum", #2004, and "1976 Cancer Facts and Figures", #5008).	Colon and rectum cancer is a slow-growing cancer, which detected early is highly curable. A proctoscopic exam should be part of every physical after age 40.
VIII. Rehabilitation		
Rehabilitation is an increasingly important facet of total cancer care. (See Training Manual for a discussion on the cost of cancer.)	Invite a person who has had a laryngectomy or mastectomy to speak to the class, or invite a rehabilitation specialist from a local hospital to describe his or her profession.	As the long term survival from cancer increases, the importance of rehabilitation, that is, the adjustment of the patient to his family, his community or his job, increases. Professional therapists - include: - physical therapist - occupational therapist - speech therapist - enterostomal therapist
Rehabilitation includes meeting not only the physical but the social, emotional-vocational, and educational needs of the cancer patient. (See Training Manual for a discussion of "Rehabilitation of the Cancer Patient".)	If successfully treated, can cancer patients live full and productive lives? (See ACS Pamphlet "Cancer of the Larynx", #2631. Why must their situation be understood by family members, friends and employers?	Rehabilitation is a continuing process beginning as soon as a patient enters the hospital to the aspects of continuing care after the hospital stay. Rehabilitation is a coordinated effort by members of the rehabilitation team. The basic rehabilitation team consists of the patient, the doctor, clergy, nurse, and family. Therapy sessions with the

CONCEPTS	ACTIVITIES	SUPPLEMENTARY INFORMATION
	Role playing - Have some students take the role of cancer patients with disabilities. Other students may play family members, employers, friends, etc.	several available specialists are an important part of this concept. Physical, speech, occupational, and enterostomal therapists may be called upon.
	Invite a local therapist or hospital social worker to speak about the emotional and physical aspects of rehabilitation.	The social workers must handle any family problems which may arise. The effects on a family could be devastating, financially and psychologically, if they are not prepared. This preparation is handled by the total team to achieve the best results in this time of change.
IX. Cancer Quackery		
Treatment by a cancer quack is most dangerous since it causes a delay in adequate treatment by a competent physician.	Discuss cancer quackery. - What is the motivation of the cancer quack? - Does the cancer quack differ from other quacks? - Why do individuals seek quack treatment? - What can a community do to lessen the hazards of quackery? What can the individual do? - What is the fundamental element needed to combat quackery? - What are the characteristics of a cancer quack?	As in many medical areas, an ignorant public is taken advantage of by fakes and quacks. The area of cancer treatment has had hundreds of such misleading, totally unconfirmed "cures". Because , of fear, resulting from a lack of knowledge of cancer, the public has been susceptible to "secret cure" propaganda. A person is a quack if: 1) He offers a cancer treatment only available from himself. 2) The treatment bears his own name, or is offered in the name of his private research organization whose other members are not listed. 3) He claims he is being persecuted by the "medical establishment". 4) He uses letters of testimonials or letters from patients in support of his treatment. 5) He refuses or discourages other opinions with specialists in the medical profession.
Quackery can best be combated through a well-informed public. (See Training Manual for a discussion of "Cancer Quackery" and "Unproven Methods".)	Show ACS film, "Journey Into Darkness", #2370, and ACS Pamphlet, "I Have A Secret Cure for Cancer", #2095. What are some recent cancer "cures" that have been widely publicized? Consider both devices and drugs. Develop a summary table listing "medical cures", "devices" and "claims". Do the promoters provide any scientific evidence of the effectiveness of their product?	

CONCEPTS	ACTIVITIES	SUPPLEMENTARY INFORMATION
		See ACS booklet, "Unproven Methods of Cancer Management". (Code 3014)
Early detection and treatment by a competent physician can decrease the death rate from all forms of cancer.	What is the role of Federal agencies, Food and Drug Administration, Federal Communication Commission, Federal Trade Commission, in protecting people from these quack products? What other agencies provide the general public with some form of protection?	He is a reputable doctor if: 1) He does not offer an exclusive treatment. Approved treatments are available in many hospitals. 2) He does not "patent" a treatment or cure that could help all mankind, and his membership in medical organizations is always on record. 3) He belongs to organizations which spread the latest in medical knowledge - not suppress this information. 4) He does not divulge case histories to the public. 5) He insists upon laboratory proof of cancer in making his final diagnosis, and before treatment is given. 6) He always welcomes a consultation with colleagues in the medical profession.
Fear and other emotions associated with cancer may motivate an individual to seek quack cures out of desperation.	Describe or list ways one can select a qualified physician. Assign students to report on specific unproven cancer cures.	
X. Community Responsibility in Cancer Control		
The solution to the cancer problem lies in the decision by indivudals to assume both a personal and social responsibility in cancer control.	Have a small number of students research and report on the National Cancer Program. Have students report on recent periodical references about cancer research. Have the students make up their own pamphlets on cancer prevention.	The National Cancer Program is federally funded program aimed at eliminating or preventing all human cancers. It supports research and education in cancer prevention, detection, diagnosis, treatment and rehabilitation. Cancer research is a very extensive project including many areas of interest. (See Training Manual - "The National Cancer Program".)

CONCEPTS	ACTIVITIES	SUPPLEMENTARY INFORMATION
There are several voluntary agencies, most notably the American Cancer Society engaged in the war on cancer.	Invite a speaker from the ACS to speak on the role of the Society in cancer control. Consider public education programs, research efforts, rehabilitation and treatment programs, and individual counseling.	Examples of other organizations are: - various hospital and local research institutes notably, Roswell Park Memorial Institute and Memorial Sloan-Kettering Institute.
Roswell Park Memorial Institute, one of the worlds oldest leading cancer research, treatment, and educational centers, is a part of the New York State Department of Health.	Students devise a plan of personal action which will protect themselves and help the fight against cancer. Have students survey the community to determine the kinds and extent of cancer programs available. Look for programs related to: 1) cancer detection 2) cancer education 3) treatment facilities 4) research 5) coordination of efforts Can-Dial, an audio-tape library offered by Roswell Park Memorial Institute, is available to all New York State teachers and students for reference work. Call 1-800-462-1884 toll free. (See Appendix XVII for the list of tapes.)	Some actions students may consider are: 1) Stop smoking. 2) Protect one's self from the sun. 3) Perform regular BSE. 4) Have a yearly Pap Test. 5) Have regular physical and dental exams. 6) Enter the health field as a professional or volunteer. 7) Become an informed citizen able to hold intelligent positions on issues like pollution, atomic power, etc. 8) Begin now to educate family, friends, and schoolmates about cancer.

GLOSSARY

ATP - an abbreviation for adenosine triosphate, a compound which serves as a carrier of energy for cells.

bacteriophage - a type of virus that parasitizes bacteria.

benign - not cancerous.

cancer - a large group of diseases which involve the uncontrolled reproduction of abnormal cells. Cancer cells invade and destroy normal tissue.

carbon dioxide - an odorless, colorless gas (CO_2) resulting from oxidation of carbon. It is formed in the tissues, excreted by lungs. It assists in maintaining the neutrality of body tissues and fluids.

carcinogen - a cancer-causing substance.

carcinoma - a cancer that begins in epithelial (covering) tissue.

carcinoma-in-situ - a cancer that remains in its original location without spreading.

cervix - neck or necklike part. Uterine cervix - the lower and narrow end of the uterus.

chemotherapy - the use of chemical compounds to treat cancer.

chromosomes - long threads containing DNA found within the nucleus of a cell. Chromosomes contain the cell's hereditary material.

chromatid - one chromosome of a double chromosome formed during mitosis.

DNA - Deoxyribose nucleic acid - a molecule found in chromosomes and some viruses. DNA is involved with inheritance of traits and directs building of proteins.

enterostomy - artificial opening into intestine through the abdominal wall.

epidemiology - the study of the conditions under which diseases occur in a population.

homeostasis - a tendency toward uniformity or stability in the normal body states of the organism.

hormone - a chemical substance produced in the body and carried in the blood to another organ or part of the body where it effects functional activity.

immune - to be resistant to disease.

immunotherapy - treatment by the production of immunity; a reaction to invading potentially dangerous cells.

inorganic - generally, compounds that do not contain carbon (carbon dioxide is an exception).

malignant - cancerous, life-threatening.

mammography - a special technique for diagnostic x-ray examination of the breast.

mastectomy - surgical removal of the breast.

menarche - the beginning of the menstrual function.

metabolism - all the physical and chemical activities by which living organized substance is produced and maintained.

metastasis - the spread of disease from one organ or part to another not directly connected. In this way cancer may occur in different parts of the body, spreading from one primary tumor.

mitosis - a division of the nucleus of cells involving the replication and lengthwise splitting of chromosomes, and the formation of two new cells.

mitochondria - the cellular "powerhouses" which provide the cell with most of its usable energy.

mutation - a permanent transmissible change in the characters of an offspring, from those of its parents. An inherited change - resulting often from a change in DNA.

nucleotide - a unit of a DNA molecule.

organelle - specific organized particles within most cells which perform a specific function.

parasite - a plant or animal that lives upon or within another living organism, without giving compensation for advantages gained.

pathology - the branch of medicine that deals with the essential nature of diseases. (structural and functional changes in tissues and organs which cause or are caused by disease).

pH - a measure of the degree of acidity or alkalinity of a substance.

phagocyte - a whote blood cell which engulfs foreign particles invading the body.

polycyclic hydrocarbon - carbon compounds consisting of many rings of elements. The compounds have been associated with tumors and cancer.

Pap Test - can detect cancer of the cervix and uterus early.

Procto - examination of the colon and rectum for the presence of growths.

psycho-social - relating psychological and social conditions to general health attitudes.

RNA - Ribonucleic acid - a molecule found in cells and some viruses. RNA is also involved with inheritance of traits.

regression - returning to a former state.

ribosomes - organelles within cells that are involved with protein synthesis.

sarcoma - a cancer that begins in connective tissue. (bone, muscle)

spindle - spindle shaped achromatic figure along which the chromosomes are distributed during mitosis and meiosis.

thymine - one of the nitrogenous bases in DNA.

transduction - the transfer of hereditary material from one organism to another by a virus.

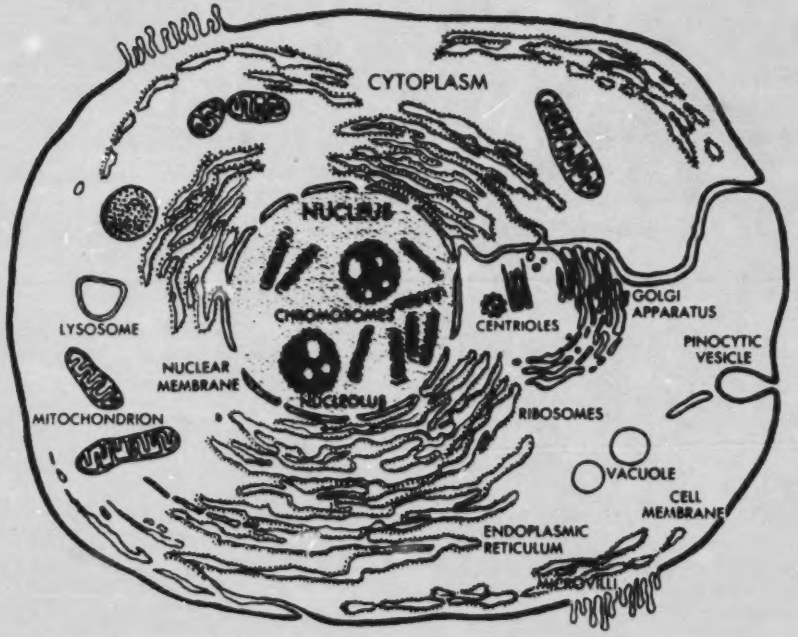
tumor - an abnormal growth which persists and grows independently of its surrounding structures.

virus - a submicroscopic infectious agent, composed of nucleic acid and DNA or RNA, and a protein coat. A virus invades living cells and reproduces within the cells.

xeroradiography - a dry, photoelectric process for recording x-ray images. Good for showing contrasts in soft tissue. Used in breast cancer detection.

APPENDIX 1

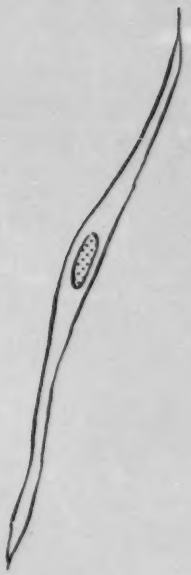
DIAGRAM OF A TYPICAL CELL



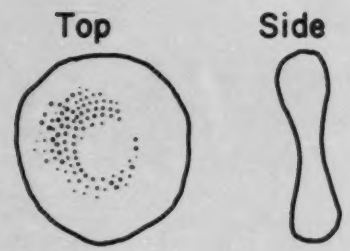
APPENDIX 2

SOME EXAMPLES OF HUMAN CELLS

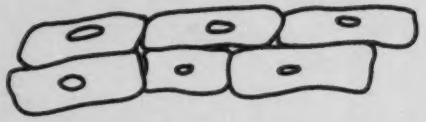
Nerve Cell



Muscle Cell



Two views of Red Blood Cell

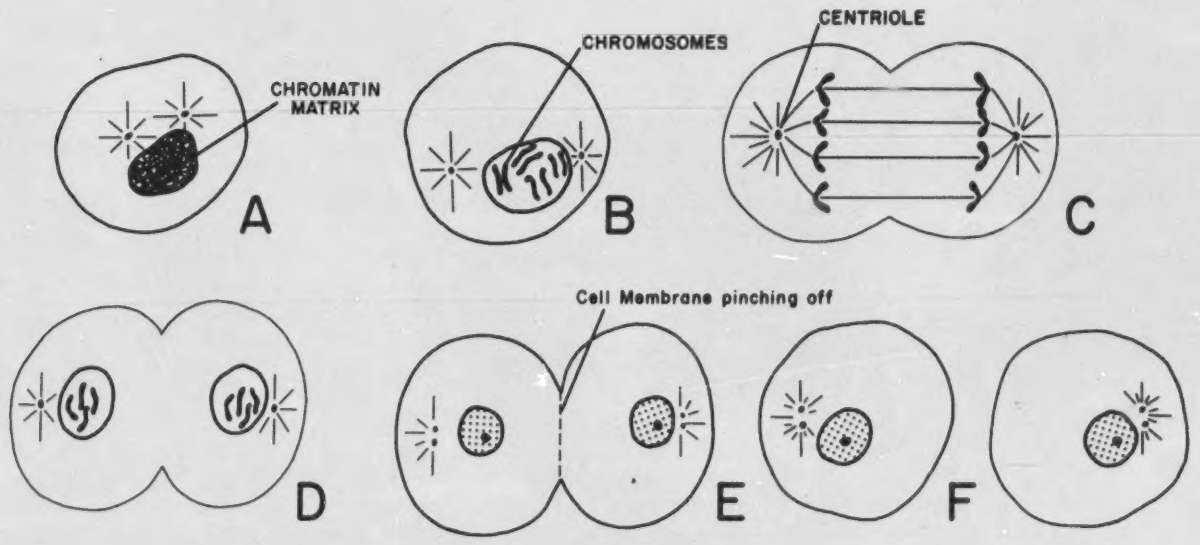


Epithelial Cells

Elena Greco

APPENDIX 3

CELL DIVISION – MITOSIS



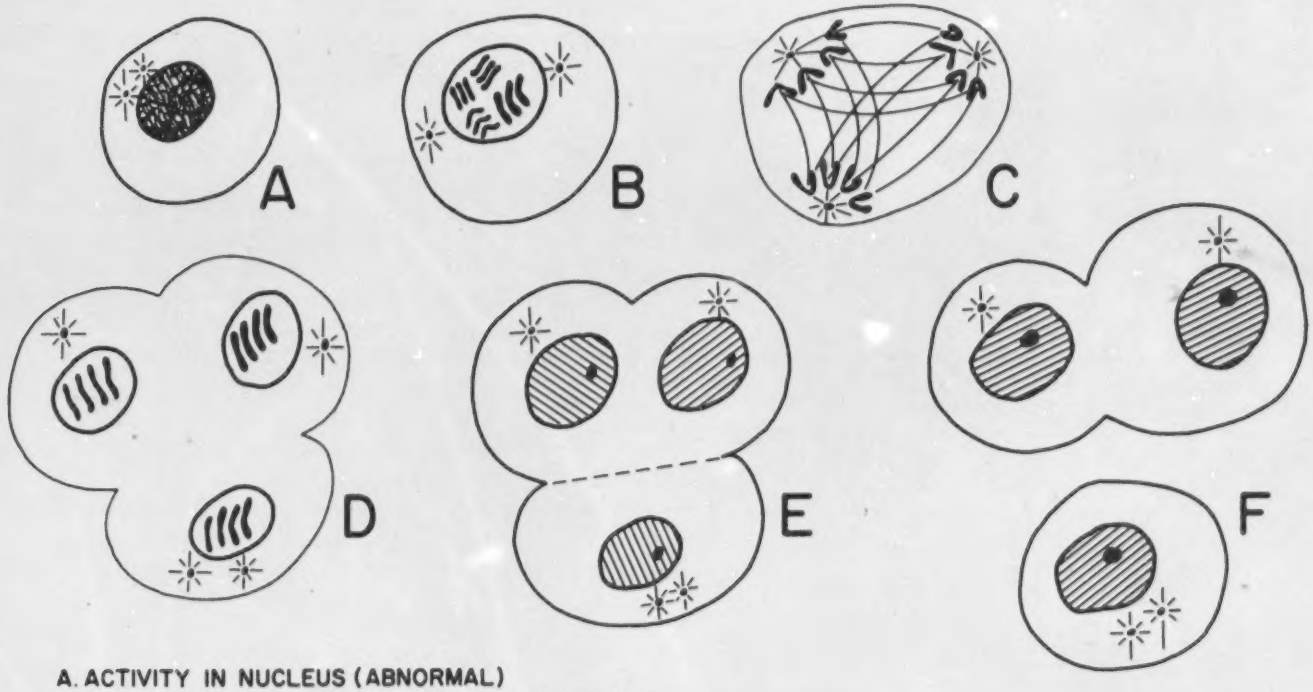
A. NUCLEAR ACTIVITY (CHROMATIN MATRIX)
B. CHROMOSOME AGGREGATION AND REPLICATION
C. CHROMOSOME SEPARATION
D. NUCLEAR FORMATION
E. CELL MEMBRANE ESTABLISHED
F. CELL SEPARATION

THIS DIVISION IS NORMAL BECAUSE:
1) CHROMOSOMES REPLICATE AND MIGRATE TO OPPOSITE ENDS OF THE CELL
2) TWO NUCLEI ARE FORMED
3) THE NUCLEI ARE SMALL AND STAIN LIGHTLY
4) TWO SIMILAR CELLS ARE PRODUCED

Elena Greco

APPENDIX 4

AN EXAMPLE OF ABNORMAL CELL DIVISION



A. ACTIVITY IN NUCLEUS (ABNORMAL)
B. CHROMOSOME AGGREGATION AND REPLICATION
C. ABNORMAL SEPARATION INTO THREE AREAS (TRIPOLAR MITOSIS)
D. THREE NUCLEI FORM
E. ABNORMAL NUCLEAR SEPARATION
F. SEPARATION INTO ABNORMAL CELLS

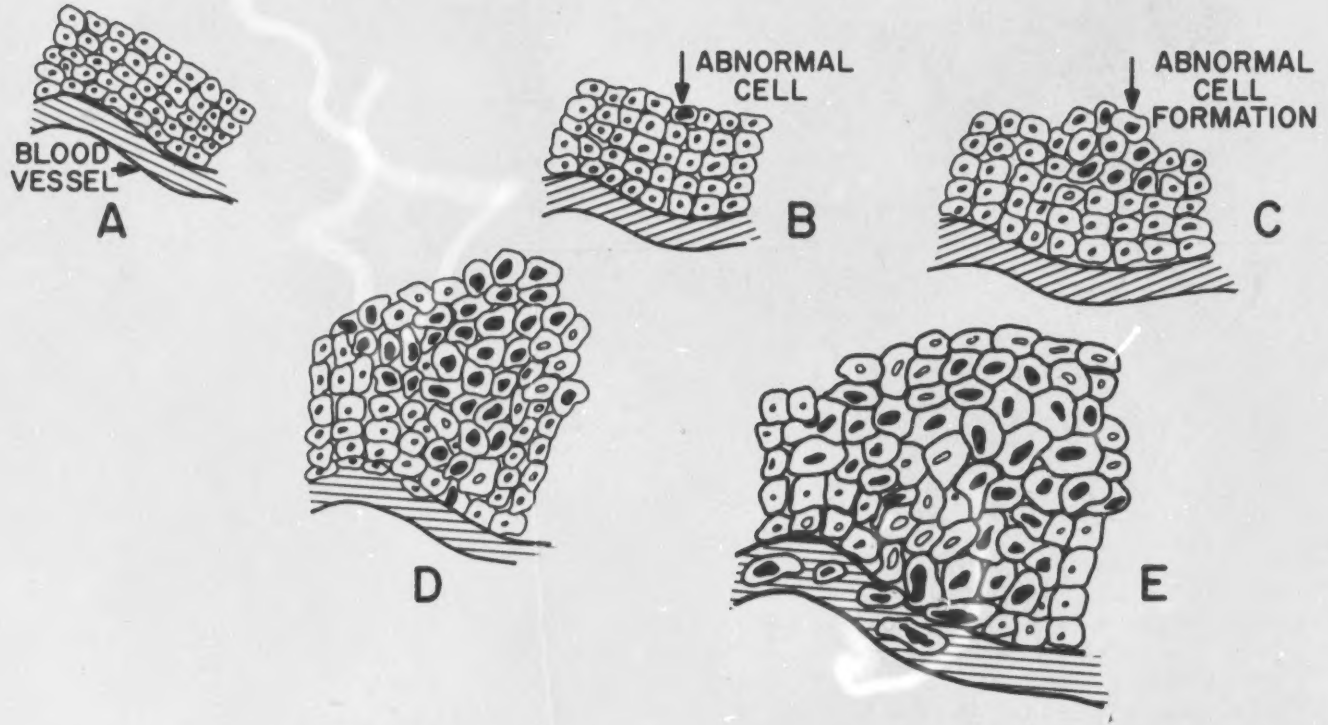
THIS DIVISION IS ABNORMAL BECAUSE:

1) THREE REPLICATIONS OF CHROMOSOMES INSTEAD OF TWO (B)
2) THREE NUCLEI ARE FORMED (INSTEAD OF TWO NORMAL NUCLEI)
3) THE NUCLEI ARE GENERALLY LARGER AND STAIN DARKER
4) ABNORMAL CELLS ARE PRODUCED (F)

Elena Greco

APPENDIX 5

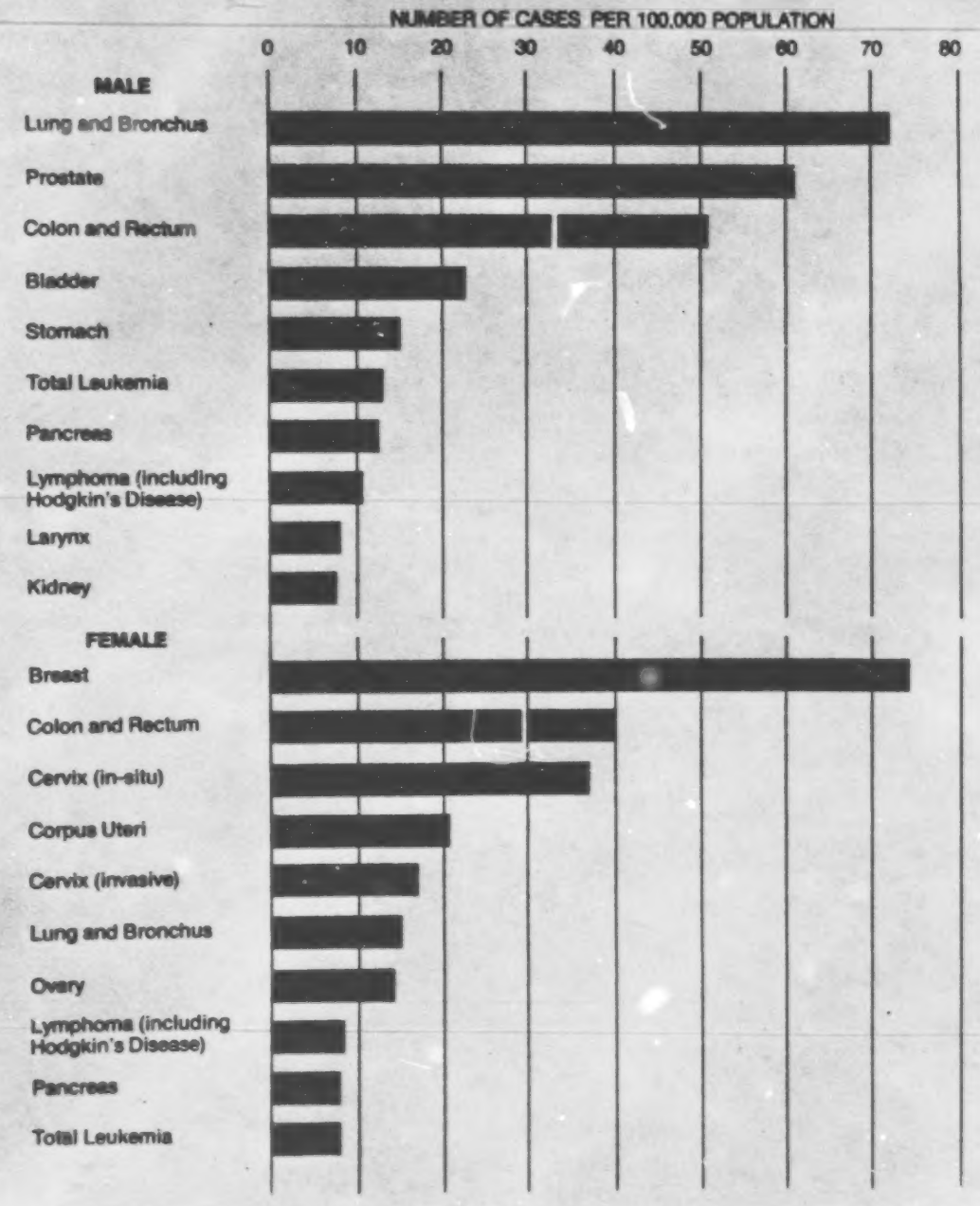
TUMOR GROWTH AND SPREAD



A. NORMAL TISSUE
B. ABNORMAL CELL APPEARS
C. GROWTH OF ABNORMAL TISSUE
D. CONTINUED GROWTH OF TUMOR, INVADING ADJACENT AREAS
E. METASTASIS THROUGH NEARBY BLOOD VESSEL (CAPILLARY)

Elena Greco

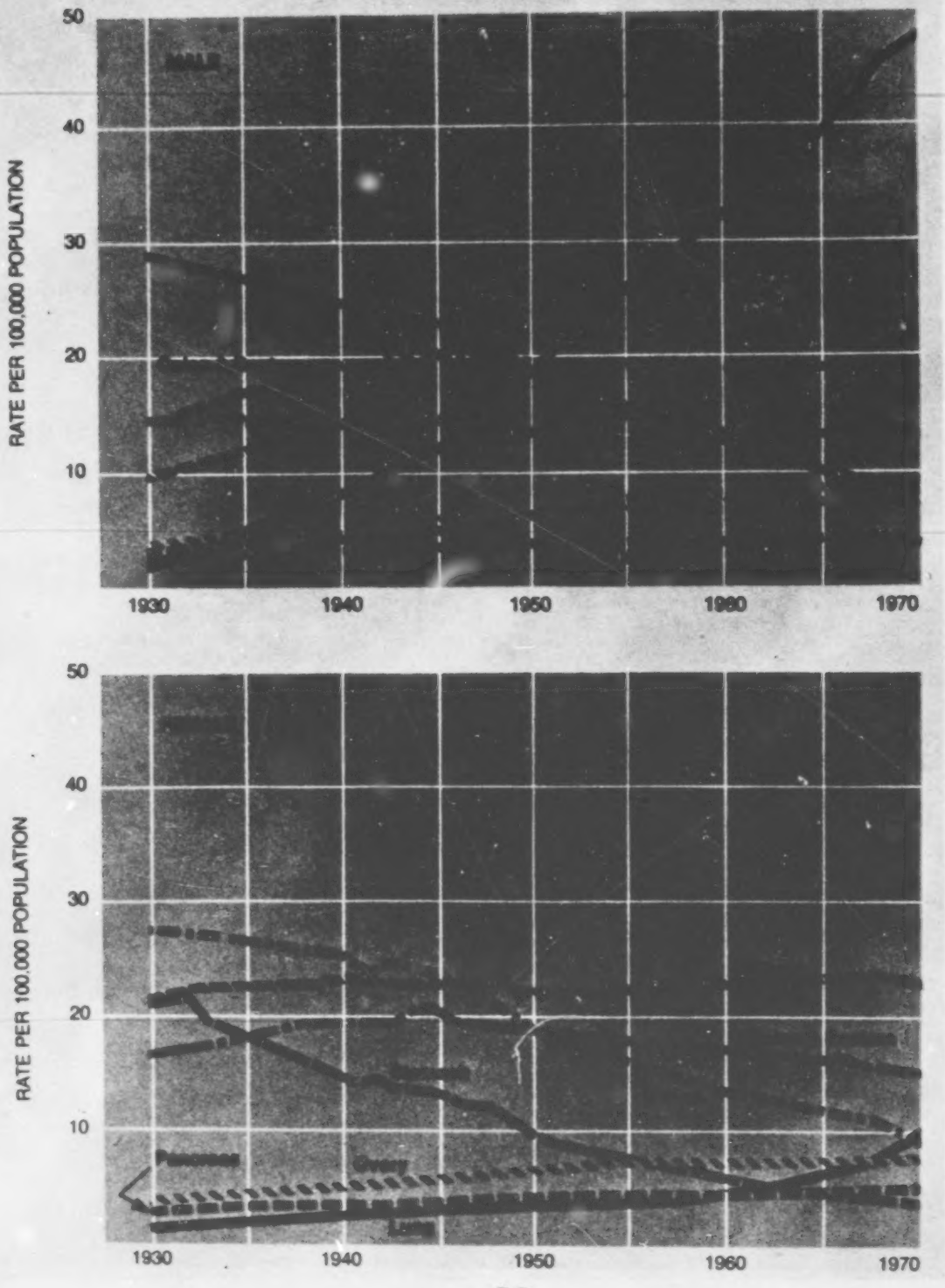
CANCER INCIDENCE BY SITE AND SEX: United States, 1969-1971
(age-adjusted to 1970 U. S. population).



APPENDIX 6

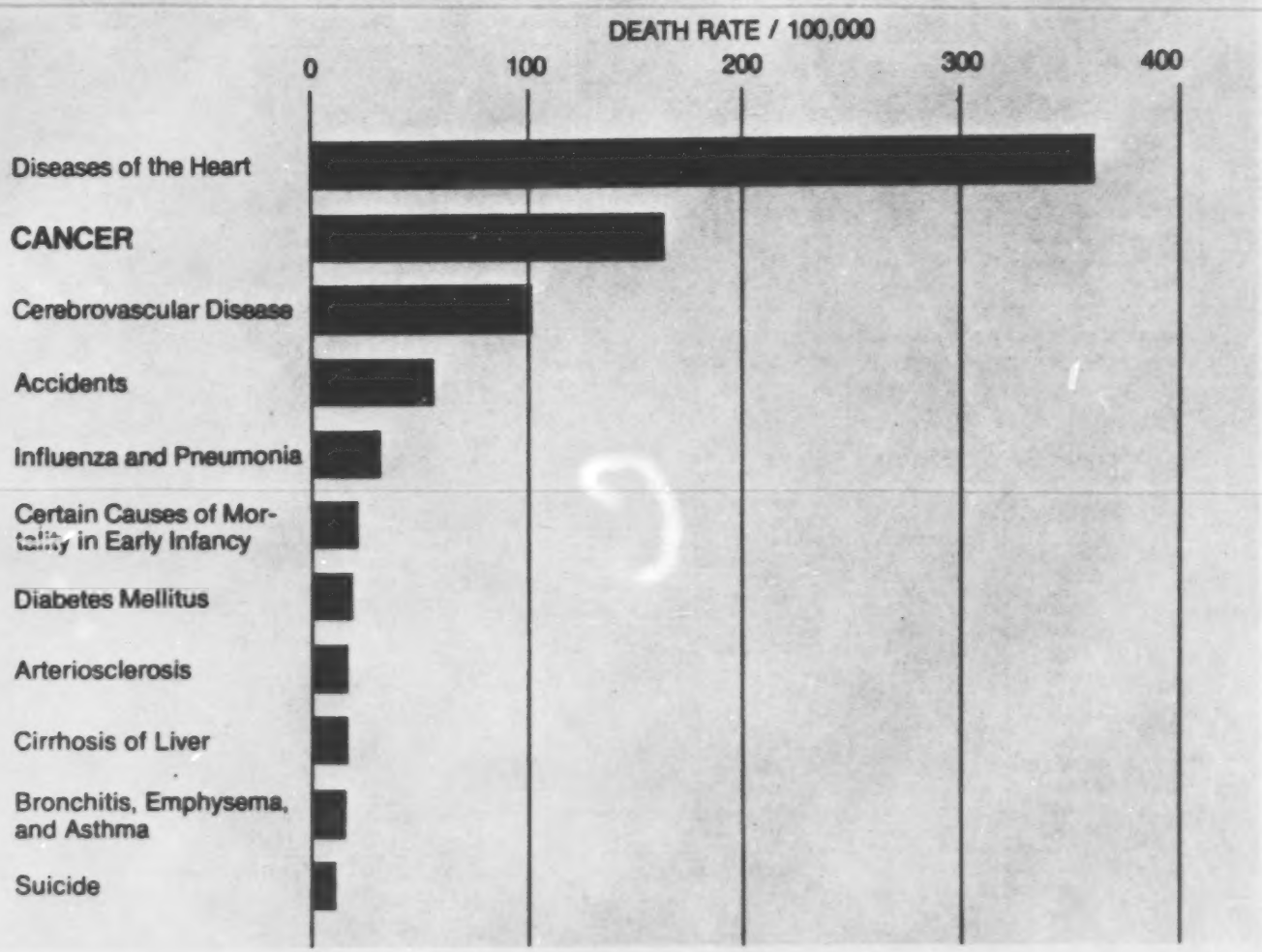
APPENDIX 7

TIME TRENDS IN CANCER MORTALITY RATES, BY SITE AND SEX:
United States, 1930-1970 (age-adjusted to U. S. 1940 population).



APPENDIX 8

DEATH RATES FOR THE 11 LEADING CAUSES OF DEATH:
United States, 1970



APPENDIX 9

Mortality for Leading Causes of Death: United States, 1971

Rank	Cause of Death	Number of Deaths	Death Rate Per 100,000 Population	Percent of Total Deaths
All Causes		**1,927,542**	**932.2**	**100.0**
1	Diseases of Heart	743,138	359.5	38.6
2	Cancer	337,398	163.2	17.5
3	Stroke	209,092	101.1	10.8
4	Accidents	113,439	54.9	5.9
5	Influenza & Pneumonia	57,194	27.7	3.0
6	Certain Diseases of Infancy	38,494	18.6	2.0
7	Diabetes Mellitus	38,256	18.5	2.0
8	Cirrhosis of Liver	31,808	15.4	1.7
9	Arteriosclerosis	31,521	15.2	1.6
10	Suicide	24,092	11.7	1.2
11	Emphysema	22,539	10.9	1.2
12	Homicide	18,787	9.1	1.0
13	Congenital Anomalies	15,957	7.7	0.8
14	Nephritis and Nephrosis	8,443	4.1	0.4
15	Hypertension	7,837	3.8	0.4
	Other & Ill-Defined	229,547	110.8	11.9

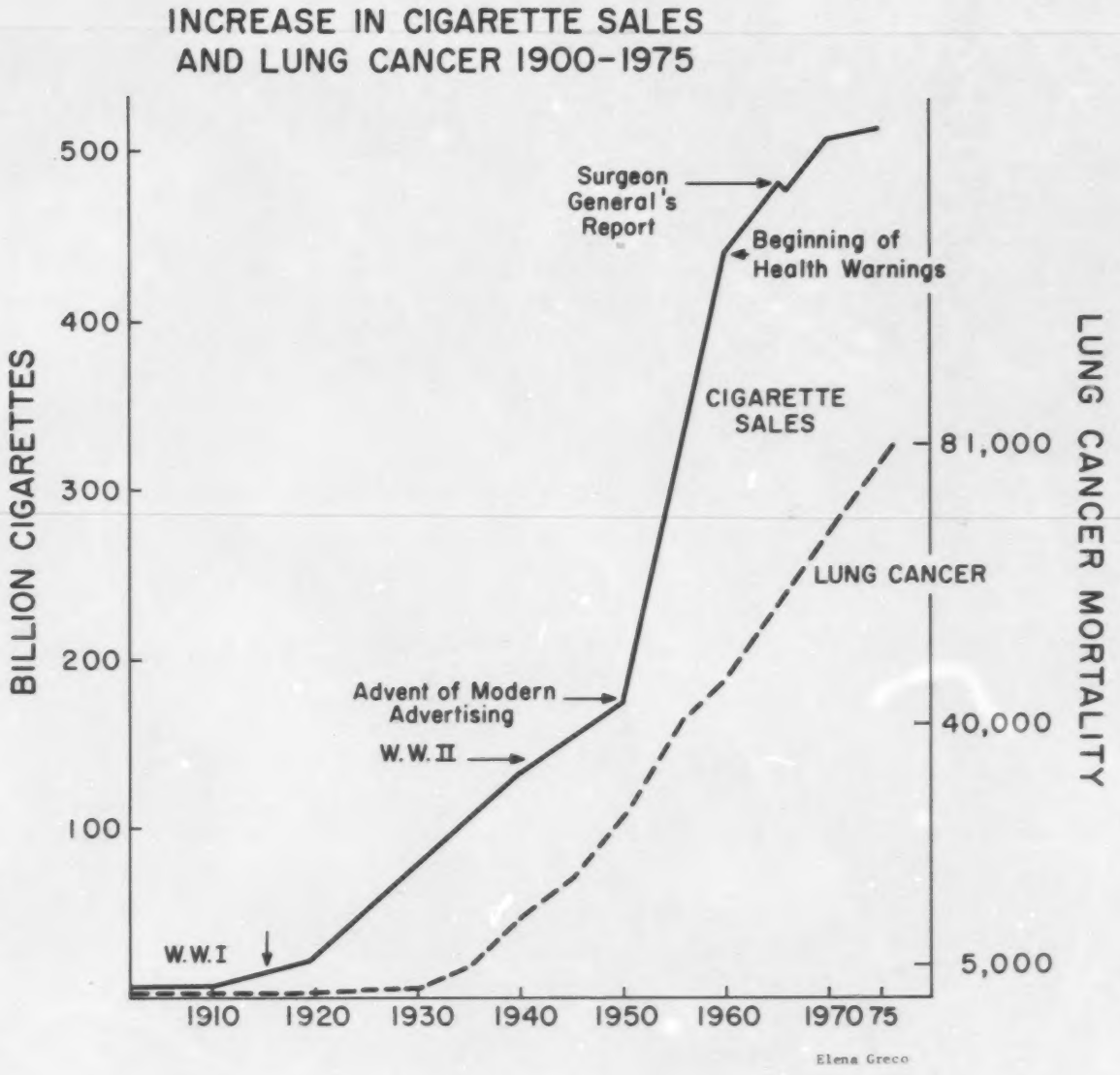
Source: Vital Statistics of the United States, 1971
Prepared by: Research Department, American Cancer Society, July, 1974

Applying Cancer Statistics Locally

Community Population	Estimated No. Who are Alive Cured of Cancer	Estimated No. Cancer Cases Under Medical Care in 1975	Estimated No. Who Will Die of Cancer in 1975	Estimated No. of New Cases in 1975	Estimated No. Who Will be Saved from Cancer in 1975	Estimated No. Who Will Eventually Develop Cancer	Estimated No. Who Will Die of Cancer if Present Rates Continue
1,000	7	4	1	3	1	250	150
2,000	15	9	3	6	2	500	300
3,000	22	13	4	8	3	750	450
4,000	30	18	6	11	4	1,000	600
5,000	37	21	7	14	5	1,250	750
10,000	74	43	15	28	9	2,500	1,500
25,000	185	107	37	70	23	6,250	3,750
50,000	370	215	75	140	47	12,500	7,500
100,000	740	430	150	280	93	25,000	15,000
200,000	1,480	860	300	560	186	50,000	30,000
500,000	3,700	2,150	750	1,400	465	125,000	75,000

NOTE: The figures can only be the roughest approximation of actual data for your community. It is suggested that every effort be made to obtain actual data from a Registry source.

APPENDIX 10


INCREASE IN CIGARETTE SALES
AND LUNG CANCER 1900-1975
BILLION CIGARETTES
500
400
300
200
100
LUNG CANCER MORTALITY
81,000
40,000
5,000
Surgeon General's Report
Beginning of Health Warnings
CIGARETTE SALES
LUNG CANCER
Advent of Modern Advertising
W.W. II
W.W.I
1910
1920
1930
1940
1950
1960
1970 75
Elena Greco

ESTIMATED NEW CASES AND DEATHS FOR MAJOR SITES OF CANCER – 1975*

Site	No. of Cases	Deaths
Lung	91,000	81,000
Colon-Rectum	99,000	49,000
Breast	89,000	33,000
Uterus	46,000**	11,000
Oral	23,000	8,000
Skin	9,000***	5,000
Leukemia	21,000	15,000

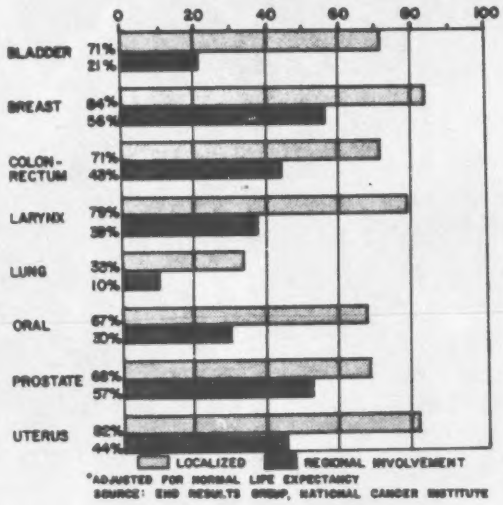
*Figures rounded to the nearest 1000.

**If carcinoma-in-situ included, cases total over 86,000.

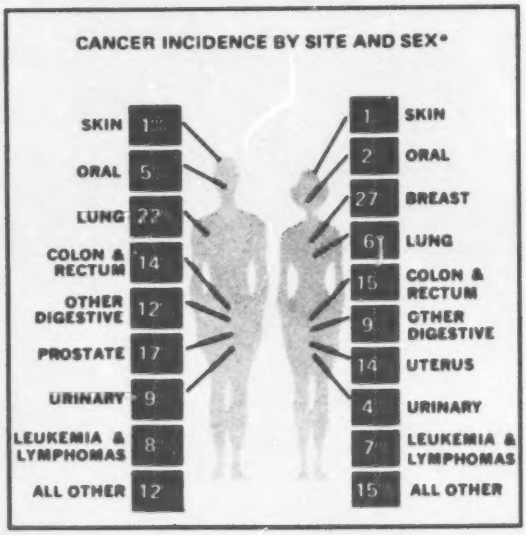
***Estimates vary widely, from 300,000-600,000 or more, for superficial skin cancer.

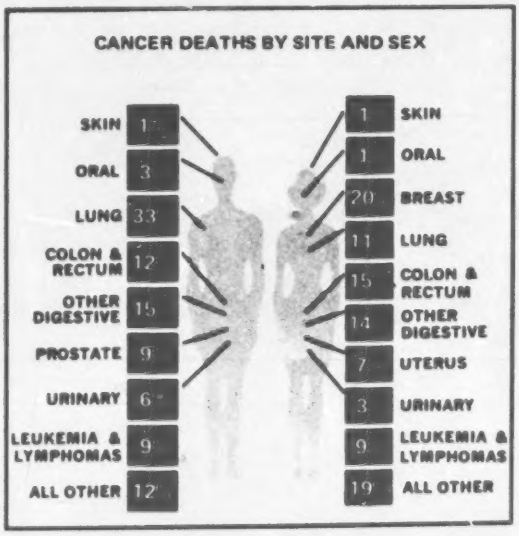
INCIDENCE RATES ARE BASED ON RATES FROM N.C.I. THIRD NATIONAL CANCER SURVEY

FIVE YEAR CANCER SURVIVAL RATES* FOR SELECTED SITES



APPENDIX 11





*Excluding superficial skin cancer and carcinoma-in-situ of uterine cervix.

American Cancer Society "1976 Cancer Facts and Figures" #5008

APPENDIX 12

LEADING CANCER SITES, 1974

SITE	ESTIMATED NEW CASES 1974	ESTIMATED DEATHS 1974	WARNING SIGNAL IF YOU HAVE ONE, SEE YOUR DOCTOR	SAFEGUARDS	COMMENT
BREAST	90,000	33,000	LUMP OR THICKENING IN THE BREAST.	ANNUAL CHECKUP. MONTHLY BREAST SELF EXAM.	THE LEADING CAUSE OF CANCER DEATH IN WOMEN.
COLON AND RECTUM	99,000	48,000	CHANGE IN BOWEL HABITS; BLEEDING.	ANNUAL CHECKUP INCLUDING PROCTOSCOPY, ESPECIALLY FOR THOSE OVER 40.	CONSIDERED A HIGHLY CURABLE DISEASE WHEN DIGITAL AND PROCTOSCOPIC EXAMINATIONS ARE INCLUDED IN ROUTINE CHECKUPS.
LUNG	83,000	75,000	PERSISTENT COUGH, OR LINGERING RESPIRATORY AILMENT.	PREVENTION: HEED FACTS ABOUT SMOKING, ANNUAL CHECKUP. CHEST X-RAY.	THE LEADING CAUSE OF CANCER DEATH AMONG MEN. THIS FORM OF CANCER IS LARGELY PREVENTABLE.
ORAL (INCLUDING PHARYNX)	24,000	8,000	SORE THAT DOES NOT HEAL. DIFFICULTY IN SWALLOWING.	ANNUAL CHECKUP.	MANY MORE LIVES SHOULD BE SAVED BECAUSE THE MOUTH IS EASILY ACCESSIBLE TO VISUAL EXAMINATION BY PHYSICIANS AND DENTISTS.
SKIN	300,000*	5,000	SORE THAT DOES NOT HEAL, OR CHANGE IN WART OR MOLE.	ANNUAL CHECKUP, AVOIDANCE OF OVEREXPOSURE TO SUN.	SKIN CANCER IS READILY DETECTED BY OBSERVATION, AND DIAGNOSED BY SIMPLE BIOPSY.
UTERUS	46,000*	11,000	UNUSUAL BLEEDING OR DISCHARGE.	ANNUAL CHECKUP, INCLUDING PELVIC EXAMINATION WITH PAP TEST.	UTERINE CANCER MORTALITY HAS DECLINED 65% DURING THE LAST 35 YEARS. WITH WIDER APPLICATION OF THE PAP TEST, MANY MORE LIVES CAN BE SAVED, ESPECIALLY FROM CERVICAL CANCER.
KIDNEY AND BLADDER	43,000	16,000	URINARY DIFFICULTY. BLEEDING - IN WHICH CASE CONSULT DOCTOR AT ONCE.	ANNUAL CHECKUP WITH URINALYSIS.	PROTECTIVE MEASURES FOR WORKERS IN HIGH-RISK INDUSTRIES ARE HELPING TO ELIMINATE ONE OF THE IMPORTANT CAUSES OF THESE CANCERS.
LARYNX	10,000	3,000	HOARSENESS - DIFFICULTY IN SWALLOWING.	ANNUAL CHECKUP, INCLUDING MIRROR LARYNGOSCOPY.	READILY CURABLE IF CAUGHT EARLY.
PROSTATE	54,000	18,000	URINARY DIFFICULTY.	ANNUAL CHECKUP, INCLUDING PALPATION.	OCCURS MAINLY IN MEN OVER 60. THE DISEASE CAN BE DETECTED BY PALPATION AND URINALYSIS AT ANNUAL CHECKUP.
STOMACH	23,000	14,000	INDIGESTION.	ANNUAL CHECKUP.	A 40% DECLINE IN MORTALITY IN 20 YEARS, FOR REASONS YET UNKNOWN.
LEUKEMIA	21,000	15,000	LEUKEMIA IS A CANCER OF BLOOD-FORMING TISSUES AND IS CHARACTERIZED BY THE ABNORMAL PRODUCTION OF IMMATURE WHITE BLOOD CELLS. ACUTE LEUKEMIA STRIKES MAINLY CHILDREN AND IS TREATED BY DRUGS WHICH HAVE EXTENDED LIFE FROM A FEW MONTHS TO AS MUCH AS TEN YEARS. CHRONIC LEUKEMIA STRIKES USUALLY AFTER AGE 25 AND PROGRESSES LESS RAPIDLY. IF DRUGS OR VACCINES ARE FOUND WHICH CAN CURE OR PREVENT ANY CANCERS, THEY PROBABLY WILL BE SUCCESSFUL FIRST FOR LEUKEMIA AND THE LYMPHOMAS.		
LYMPHOMAS	28,000	20,000	THESE DISEASES ARISE IN THE LYMPH SYSTEM AND INCLUDE HODGKIN'S AND LYMPHOSARCOMA. SOME PATIENTS WITH LYMPHATIC CANCERS CAN LEAD NORMAL LIVES FOR MANY YEARS.		

*Carcinoma-in-situ of the uterine cervix and superficial skin cancers not included in totals.

American Cancer Society "Nature of Cancer "Senior High School Teaching Kit, Lesson 7, #2054.02

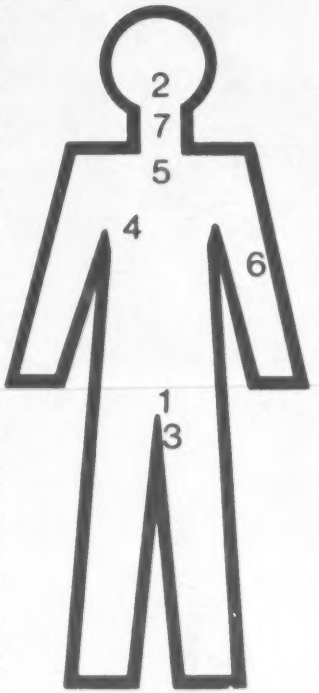
APPENDIX 13

CANCER PREVENTION AND CONTROL

Cancer's Warning Signals!

1. Change in bowel or bladder habits.
2. A sore that does not heal.
3. Unusual bleeding or discharge.
4. Thickening or lump in breast or elsewhere.
5. Indigestion, or difficulty in swallowing.
6. Obvious change in wart or mole.
7. Nagging cough or hoarseness.

If you have a warning signal, see your doctor.



Protect Yourself With These Safeguards Against CANCER	
BREAST	Monthly Self-Exam
UTERUS	Pap Test Once a Year
LUNG	Don't Smoke Cigarettes
SKIN	Avoid Excess Sun
COLON RECTUM	Procto Annually Especially After 40
MOUTH	Exams Regularly

American Cancer Society "Nature of Cancer" Senior High Teaching Kit, Lesson 8, #2054.02

APPENDIX 14

TRENDS IN AGE-ADJUSTED CANCER DEATH RATES

Per 100,000 Population 1952-54 to Recent					
Sex	Site	1952-54	Recent	Percent Changes	Comments
Male	All Sites	136.4	155.1	+ 14	Steady increase mainly due to lung cancer.
Female	All Sites	118.1	109.6	- 8	Slight decrease.
Male	Breast	0.2	0.2	—	Constant rate.
Female	Breast	21.8	22.9	+ 5	Slight fluctuations: Overall no change.
Male	Colon & Rectum	19.3	18.8	- 3	Slight decrease in both sexes.
Female	Colon & Rectum	18.0	15.8	- 12	
Male	Lung	22.7	44.5	+ 96	Steady increase in both sexes due to cigarette smoking.
Female	Lung	4.0	8.1	+ 103	
Male	Oral	4.6	4.9	+ 7	Slight fluctuations: Overall no change in both sexes.
Female	Oral	1.4	1.4	—	
Male	Skin	2.4	2.5	+ 4	Slight fluctuations: Overall no change in both sexes.
Female	Skin	1.5	1.5	—	
Female	Uterus	17.2	10.6	- 38	Steady decrease attributed in part to widening acceptance of regular checkup with "Pap Test".
Male	Esophagus	3.8	4.1	+ 8	Slight fluctuations: Overall no change in both sexes.
Female	Esophagus	1.1	1.1	—	
Male	Stomach	16.9	9.1	- 46	Steady decrease in both sexes: Reasons unknown.
Female	Stomach	8.7	4.5	- 48	
Male	Pancreas	6.9	8.8	+ 28	Steady increase in both sexes: Reasons unknown.
Female	Pancreas	4.3	5.2	+ 21	
Male	Prostate	14.0	13.5	- 4	Early increase, later decrease, again increasing.
Female	Ovary	7.2	7.6	+ 6	Steady increase.
Male	Kidney	2.9	3.5	+ 21	Steady slight increase.
Female	Kidney	1.7	1.7	—	Slight fluctuations: Overall no change.
Male	Leukemia	6.8	7.3	+ 7	Early increase, later leveling off.
Female	Leukemia	4.7	4.6	- 2	Slight early increase, later leveling off.

American Cancer Society "Nature of Cancer" Teaching Kit, Lesson 7, #2054.02

APPENDIX 15

CANCER AROUND THE WORLD

Age-Adjusted Death Rates Per 100,000 Population for Selected Cancer Sites for 39 Countries – 1966-67

	All Sites		Oral		Colon & Rectum		Lung		Breast	Uterus	Skin		Stomach		Prostate	Leukemia	
	Male	Female	Male	Female	Male	Female	Male	Female	Female	Female	Male	Female	Male	Female	Male	Male	Female
United States	150.6 (17)	106.7 (19)	4.55 (8)	1.31 (13)	18.79 (12)	16.09 (11)	40.24 (10)	6.75 (12)	21.83 (9)	10.85 (22)	2.51 (4)	1.47 (18)	9.5 (38)	4.7 (37)	13.82 (10)	7.49 (4)	4.81 (7)
Australia	143.2 (21)	96.8 (29)	3.57 (14)	1.08 (17)	18.18 (14)	17.08 (9)	37.64 (12)	4.77 (24)	19.15 (14)	8.28 (33)	4.42 (1)	2.64 (2)	15.4 (34)	7.7 (35)	13.98 (9)	6.27 (16)	4.45 (16)
Austria	192.7 (3)	130.3 (4)	3.07 (16)	0.81 (24)	20.58 (7)	14.92 (12)	50.35 (6)	6.09 (14)	17.47 (18)	17.67 (8)	2.02 (11)	1.60 (12)	40.0 (3)	22.3 (5)	13.38 (12)	5.66 (21)	4.58 (11)
Belgium	182.9 (5)	120.3 (8)	2.38 (25)	0.58 (36)	20.99 (5)	18.14 (6)	50.09 (7)	4.36 (24)	20.97 (12)	12.19 (13)	1.80 (20)	1.10 (29)	25.7 (19)	13.8 (18)	15.36 (6)	6.14 (19)	4.20 (22)
Bulgaria	136.3 (25)	85.1 (32)	1.99 (29)	0.66 (32)	7.05 (28)	6.22 (29)	36.00 (16)	6.72 (13)	8.75 (29)	7.35 (35)	1.53 (26)	1.18 (27)	37.6 (8)	22.9 (3)	6.15 (32)	4.89 (28)	3.75 (25)
Canada	146.8 (19)	109.0 (16)	4.11 (10)	1.09 (16)	21.51 (3)	19.02 (4)	34.52 (18)	5.36 (19)	23.47 (4)	10.37 (26)	1.85 (17)	1.30 (29)	16.0 (32)	7.6 (36)	13.16 (14)	6.77 (9)	4.40 (18)
Chile	149.8 (18)	137.1 (1)	2.06 (28)	0.76 (28)	4.03 (35)	2.45 (37)	15.18 (29)	5.59 (17)	9.37 (27)	20.09 (3)	1.00 (32)	0.95 (31)	55.6 (2)	32.7 (2)	9.48 (24)	3.95 (31)	3.08 (31)
China	102.2 (35)	74.0 (34)	6.37 (3)	2.95 (3)	15.13 (18)	8.61 (25)	10.02 (33)	5.45 (13)	3.72 (36)	15.62 (11)	1.71 (22)	1.15 (27)	18.4 (29)	12.3 (23)	1.07 (39)	2.39 (37)	1.83 (37)
Colombia	88.2 (36)	99.4 (27)	2.16 (27)	1.75 (6)	3.58 (36)	3.77 (35)	7.26 (36)	3.57 (31)	5.55 (34)	20.11 (2)	1.25 (30)	1.11 (28)	27.9 (15)	20.4 (8)	5.63 (34)	3.13 (36)	2.28 (35)
Czechoslovakia	197.5 (2)	101.4 (24)	2.93 (18)	0.75 (30)	13.01 (2)	11.11 (20)	59.98 (4)	5.69 (16)	14.94 (22)	11.68 (21)	2.28 (8)	1.76 (8)	39.5 (6)	20.7 (7)	8.86 (26)	6.40 (14)	4.34 (19)
Denmark	158.2 (14)	132.6 (2)	1.83 (31)	0.89 (22)	22.96 (2)	19.30 (3)	37.34 (15)	7.36 (8)	24.62 (3)	16.66 (9)	1.99 (12)	1.70 (9)	20.6 (26)	10.8 (27)	12.84 (16)	8.13 (2)	4.56 (13)
Dominican Rep.	31.6 (39)	35.6 (39)	1.11 (38)	0.61 (35)	1.78 (38)	1.91 (38)	3.19 (37)	1.84 (38)	2.90 (37)	6.76 (37)	0.51 (36)	0.45 (37)	3.8 (39)	1.5 (39)	3.74 (36)	0.92 (39)	1.08 (39)
England & Wales	182.5 (6)	114.9 (11)	2.92 (21)	1.41 (11)	21.36 (4)	17.10 (8)	69.66 (2)	10.73 (3)	24.58 (2)	9.68 (28)	1.52 (28)	1.19 (26)	22.7 (25)	10.5 (29)	11.98 (19)	5.49 (22)	3.82 (24)
Finland	183.1 (4)	102.8 (22)	2.93 (19)	0.99 (18)	10.76 (24)	9.08 (24)	61.00 (3)	3.91 (30)	14.65 (23)	9.45 (29)	2.13 (10)	1.58 (15)	35.6 (9)	18.5 (12)	11.34 (20)	6.75 (10)	4.88 (6)
France	174.1 (8)	100.3 (25)	9.96 (2)	0.79 (25)	18.55 (13)	13.78 (14)	27.71 (23)	3.74 (32)	16.98 (19)	10.62 (24)	1.81 (19)	1.33 (19)	19.2 (27)	9.6 (31)	15.05 (7)	6.53 (12)	4.51 (14)
Germany (F.R.)	174.1 (9)	126.5 (5)	1.80 (32)	0.51 (37)	18.99 (10)	14.69 (13)	42.09 (9)	5.10 (22)	18.03 (16)	12.81 (13)	1.98 (13)	1.57 (16)	33.3 (11)	18.5 (11)	13.30 (13)	6.01 (20)	4.44 (15)
Greece	123.9 (29)	73.5 (35)	1.28 (37)	0.55 (38)	4.94 (33)	4.87 (33)	31.32 (20)	6.05 (15)	8.19 (32)	5.92 (38)	0.95 (33)	0.89 (32)	14.7 (36)	8.7 (33)	5.82 (33)	7.33 (6)	4.78 (9)
Hong Kong	170.4 (11)	102.1 (23)	19.77 (1)	7.63 (1)	15.14 (18)	8.61 (25)	34.16 (17)	18.22 (1)	8.42 (31)	12.41 (17)	0.94 (34)	0.46 (36)	15.6 (33)	10.2 (28)	2.36 (37)	3.39 (35)	3.19 (29)
Hungary	186.8 (12)	120.1 (9)	3.81 (12)	0.72 (31)	15.51 (17)	13.52 (15)	37.36 (14)	7.23 (9)	14.57 (24)	18.26 (7)	1.90 (14)	1.59 (13)	40.6 (5)	22.5 (4)	13.16 (15)	6.26 (18)	4.40 (17)
Iceland	132.8 (26)	131.1 (3)	2.41 (23)	2.66 (4)	11.75 (23)	9.91 (23)	15.25 (28)	8.63 (4)	18.14 (17)	19.68 (4)	0.43 (38)	3.09 (1)	38.7 (7)	20.1 (9)	15.47 (4)	8.69 (1)	4.62 (10)
Ireland	142.9 (22)	115.1 (10)	4.39 (9)	1.49 (10)	19.34 (9)	18.47 (5)	33.54 (19)	7.88 (5)	21.03 (11)	8.10 (34)	2.41 (7)	2.33 (5)	23.6 (22)	15.6 (16)	12.10 (18)	5.18 (25)	3.42 (28)
Israel	121.5 (30)	114.5 (12)	1.38 (35)	0.78 (26)	10.60 (25)	10.50 (22)	22.51 (26)	7.62 (7)	21.48 (10)	4.96 (39)	1.46 (29)	1.62 (11)	17.4 (30)	11.2 (26)	7.24 (30)	7.44 (5)	5.78 (1)
Italy	152.0 (15)	99.3 (28)	5.39 (6)	0.94 (2)	14.23 (19)	10.74 (21)	30.23 (21)	4.53 (25)	16.09 (21)	12.54 (16)	1.58 (24)	1.06 (30)	31.3 (14)	16.9 (14)	9.29 (25)	6.56 (11)	4.57 (12)
Japan	141.3 (24)	94.9 (30)	1.38 (36)	0.63 (33)	8.22 (26)	7.06 (26)	13.97 (31)	4.86 (22)	3.99 (39)	12.72 (15)	0.79 (34)	0.62 (35)	65.4 (1)	34.3 (1)	1.82 (38)	3.82 (34)	2.96 (34)
Mexico	53.3 (38)	71.9 (37)	1.48 (34)	0.62 (34)	2.76 (37)	3.39 (36)	7.30 (35)	4.07 (29)	4.18 (36)	19.42 (5)	0.54 (35)	0.84 (33)	10.1 (37)	8.8 (32)	4.33 (35)	2.21 (38)	1.90 (36)
Netherlands	175.5 (7)	120.7 (7)	1.52 (33)	0.75 (29)	17.47 (15)	16.60 (10)	53.63 (5)	3.42 (34)	26.45 (1)	10.07 (27)	1.54 (25)	1.27 (24)	26.5 (16)	14.2 (17)	14.69 (8)	7.18 (7)	5.03 (5)
New Zealand	146.2 (20)	109.5 (14)	2.39 (24)	1.15 (15)	20.39 (8)	19.77 (2)	37.72 (11)	5.35 (20)	23.11 (5)	9.44 (30)	3.38 (3)	2.57 (3)	16.4 (31)	7.8 (34)	13.67 (11)	6.27 (17)	5.23 (2)
Northern Ireland	151.3 (16)	107.0 (18)	3.90 (11)	1.97 (5)	20.91 (6)	17.78 (7)	43.29 (8)	7.14 (10)	20.67 (13)	6.96 (36)	1.89 (15)	1.34 (20)	23.2 (23)	12.3 (22)	10.70 (22)	5.28 (24)	3.69 (26)
Norway	124.7 (28)	100.1 (26)	2.21 (25)	1.63 (7)	13.47 (20)	12.02 (18)	14.93 (30)	2.97 (35)	16.78 (20)	9.12 (31)	2.46 (5)	1.63 (10)	25.2 (18)	13.5 (20)	16.06 (3)	7.00 (8)	5.17 (3)
Panama	81.6 (37)	67.5 (38)	3.19 (16)	1.55 (9)	4.48 (34)	4.83 (34)	9.02 (34)	1.56 (39)	8.50 (30)	14.66 (12)	1.81 (18)	0.37 (38)	13.8 (36)	5.6 (38)	10.16 (23)	3.88 (32)	1.57 (38)
Poland	142.2 (23)	103.9 (21)	3.61 (15)	0.98 (19)	7.36 (27)	6.61 (28)	30.16 (22)	7.86 (6)	10.97 (26)	16.02 (100	1.75 (21)	1.58 (14)	40.9 (4)	19.4 (10)	7.83 (28)	5.15 (26)	3.60 (27)
Portugal	113.6 (32)	84.4 (33)	4.71 (7)	0.96 (20)	11.80 (22)	11.66 (19)	10.91 (33)	2.74 (36)	11.93 (25)	12.73 (14)	1.61 (23)	1.29 (23)	32.2 (13)	17.0 (13)	8.60 (27)	5.33 (23)	4.16 (23)
Rumania	121.1 (31)	87.1 (31)	2.71 (2)	0.78 (27)	5.94 (30)	5.65 (30)	25.86 (24)	5.12 (21)	8.89 (28)	19.40 (6)	1.14 (31)	0.79 (34)	31.7 (12)	16.0 (15)	7.70 (29)	4.44 (29)	3.17 (30)
Scotland	202.8 (1)	124.6 (6)	3.77 (13)	1.58 (8)	24.77 (1)	20.87 (1)	78.14 (1)	11.71 (2)	22.80 (7)	10.44 (25)	1.48 (28)	1.52 (17)	25.9 (17)	12.7 (21)	12.15 (17)	5.00 (27)	4.31 (21)
South Africa	171.0 (10)	113.4 (13)	6.11 (5)	1.16 (14)	1.47 (39)	1.44 (39)	37.63 (13)	6.93 (11)	23.11 (6)	12.18 (19)	3.46 (2)	2.41 (4)	23.8 (21)	11.4 (25)	19.51 (1)	7.87 (3)	4.80 (8)
Sweden	126.1 (27)	104.5 (20)	2.27 (26)	1.33 (12)	16.12 (16)	12.80 (17)	17.35 (27)	4.34 (27)	18.00 (15)	9.05 (32)	1.87 (16)	1.32 (21)	19.8 (28)	10.6 (30)	17.09 (2)	6.46 (13)	5.06 (4)
Switzerland	164.4 (13)	107.6 (17)	6.31 (4)	0.85 (23)	18.91 (11)	13.23 (16)	37.33 (16)	3.33 (34)	22.15 (8)	11.82 (20)	2.45 (6)	1.80 (7)	24.4 (20)	13.6 (19)	15.46 (5)	6.32 (15)	4.34 (20)
Venezuela	105.2 (33)	109.2 (15)	2.92 (19)	3.35 (2)	5.91 (31)	5.49 (31)	1.75 (32)	4.09 (28)	8.02 (34)	27.03 (1)	2.16 (9)	2.07 (6)	34.6 (10)	21.5 (6)	11.01 (21)	3.87 (33)	3.06 (33)
Yugoslavia	102.4 (34)	73.3 (36)	1.85 (30)	0.48 (39)	5.78 (32)	5.24 (32)	23.23 (25)	4.16 (26)	8.12 (33)	10.71 (23)	1.54 (27)	1.21 (25)	22.3 (24)	11.7 (24)	6.31 (31)	4.37 (30)	3.07 (32)

NOTE: Figures in parentheses are order of rank within site and sex group.

Source: World Health Statistics Annual 1966-67

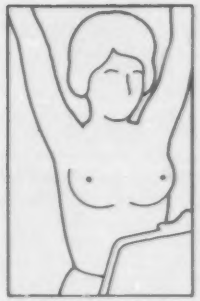
How to examine your breasts

1

In the shower:

Examine your breasts during bath or shower; hands glide easier over wet skin. Fingers flat, move gently over every part of each breast. Use right hand to examine left breast, left hand for right breast. Check for any lump, hard knot or thickening.

2



Before a mirror:

Inspect your breasts with arms at your sides. Next, raise your arms high overhead. Look for any changes in contour of each breast, a swelling, dimpling of skin or changes in the nipple.

Then, rest palms on hips and press down firmly to flex your chest muscles. Left and right breast will not exactly match—few women's breasts do.

Regular inspection shows what is normal for you and will give you confidence in your examination.

3

Lying down:

To examine your right breast, put a pillow or folded towel under your right shoulder. Place right hand behind your head—this distributes breast tissue more evenly on the chest. With left hand, fingers flat, press gently in small circular motions around an imaginary clock face. Begin at outermost top of your right breast for 12 o'clock, then move to 1 o'clock, and so on around the circle back to 12. A ridge of firm tissue in the lower curve of each breast is normal. Then move in an inch, toward the nipple, keep circling to examine *every part of your breast,* including nipple. This requires at least three more circles. Now slowly repeat procedure on your left breast with a pillow under your left shoulder and left hand behind head. Notice how your breast structure feels.

Finally, squeeze the nipple of each breast gently between thumb and index finger. Any discharge, clear or bloody, should be reported to your doctor immediately.

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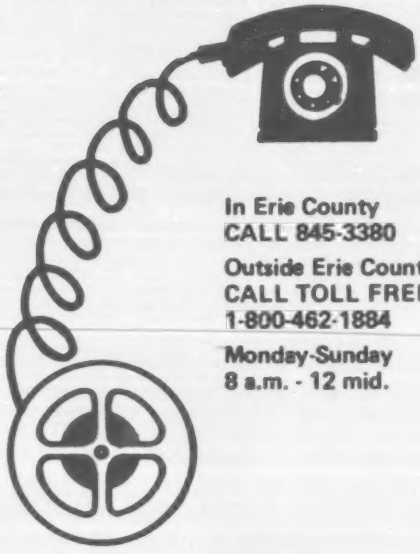
"How to Examine Your Breasts" #2088

TOLL FREE

CANCER INFORMATION

CAN-DIAL

cancer information
through your telephone



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CALL TOLL FREE
1-800-462-1884

Monday-Sunday
8 a.m. - 12 mid.

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NEW YORK STATE DIVISION
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CAN-DIAL TAPE LIBRARY*

1. What is Cancer?
2. Cancer's Warning Signals.
3. Cancer of the Breast—and How to Detect It.
4. Lung Cancer.
5. If You Want To Give Up Cigarettes.
6. Cancer of the Larynx.
7. Cancer of the Uterus.
8. Cancer of the Skin.
9. Cancer of the Colon and Rectum.
10. Leukemia.
11. Cancer of the Mouth.
12. Service and Rehabilitation Information for Cancer Patients and Their Families.
13. Chemotherapy: Drugs vs. Cancer.
14. Cancer of the Bladder.
15. Cancer of the Prostate.
16. Cancer of the Bone.
17. Cancer of the Stomach.
18. Cancer of the Brain.
19. Hodgkin's Disease.
20. Cigarette Smoking and the Pregnant Woman.
21. Cigarette Smoking and Dental Problems.
22. What is the Pap Test—How Can It Help You?
23. What is the Roswell Park Memorial Institute?
24. Radiation Therapy in Cancer Treatment.
25. Words from a Hospital Chaplain.
26. The Effect of Cigarette Smoking on the Non-Smoker.
27. Cancer of the Liver.
28. Cancer of the Pancreas.
29. Questions and Answers About Smoking and Quitting.
30. Cancer Facts for the Teenager and the Young Adult.
31. Breast Cancer Facts.
32. Questions and Answers About Smoking and Health.
33. Cancer of the Thyroid Gland.
34. Speech Therapy After Cancer Treatment.
35. Cancer Facts for the Senior Citizen.
36. The Economic Impact of Cancer on the Family.

*Spanish language tapes are available. Numbers 61-88 are the same topics as English tapes 1-28.

When the operator answers, request the number and title of the particular tape you are interested in hearing.

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